F. SCHWANHAUSSER.

VIEW CHANGING DEVICE.

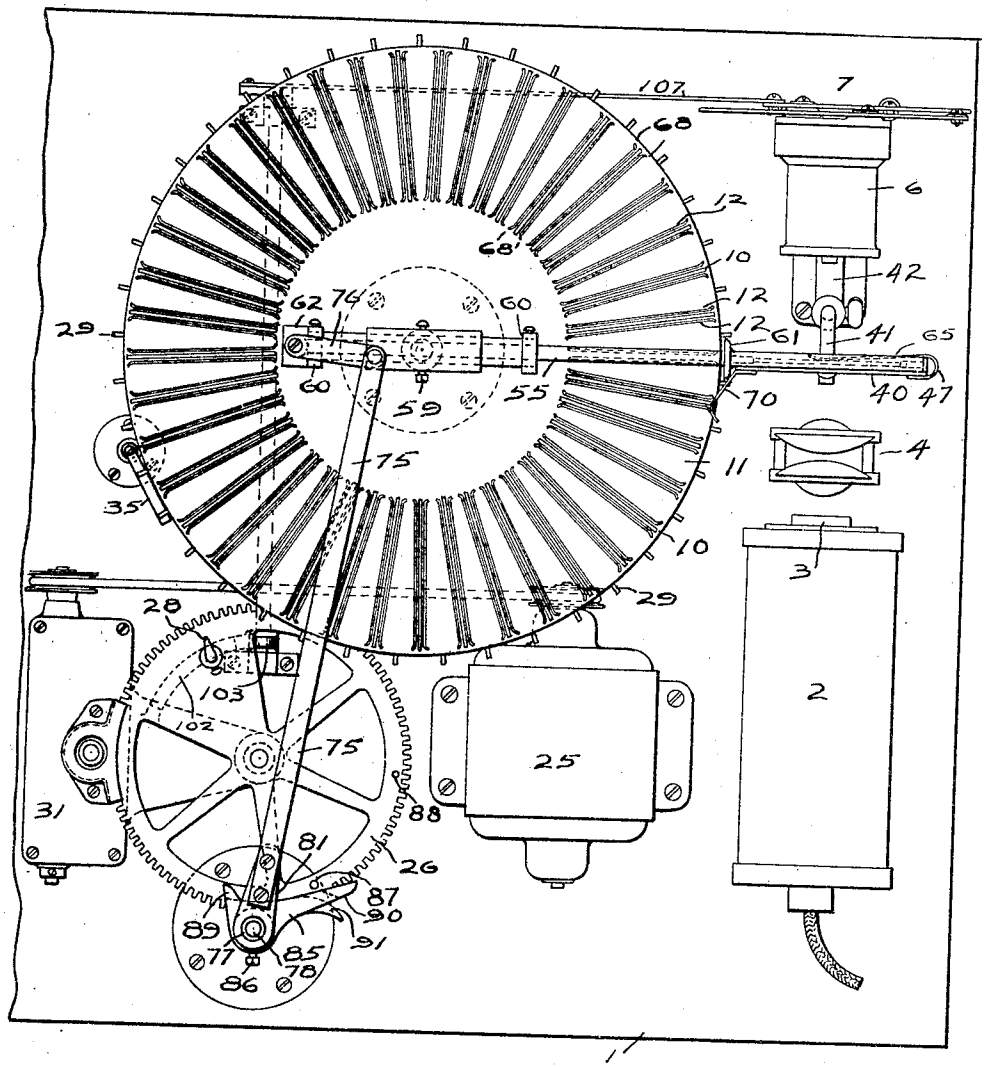
APPLICATION FILED JULY 27, 1914.

1,151,221.

Patented Aug. 24, 1915.

3 SHEETS—SHEET 1.

Fig. 1.




WITNESSES:-

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3 SHEETS—SHEET 2.

Fig. 2.

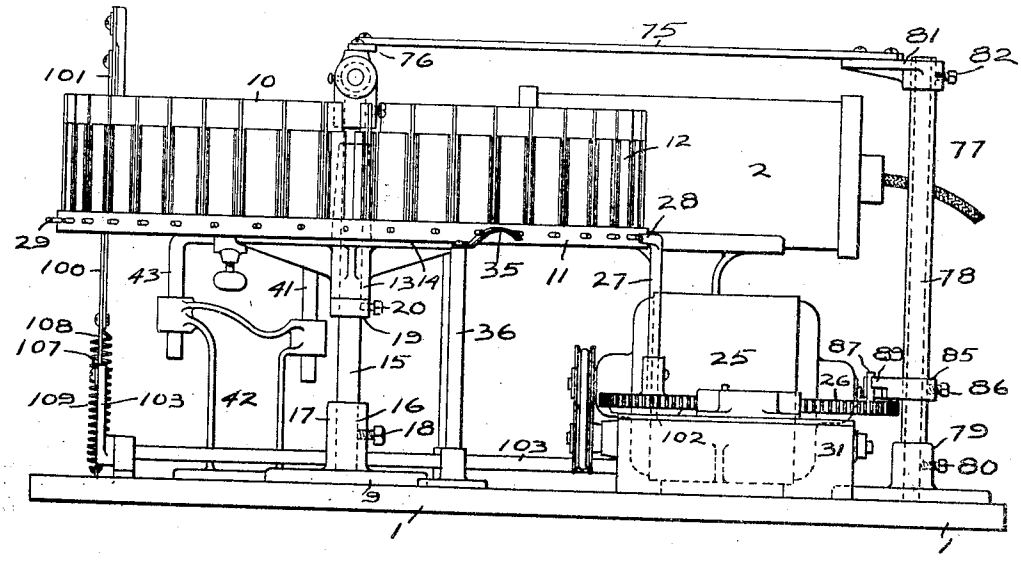
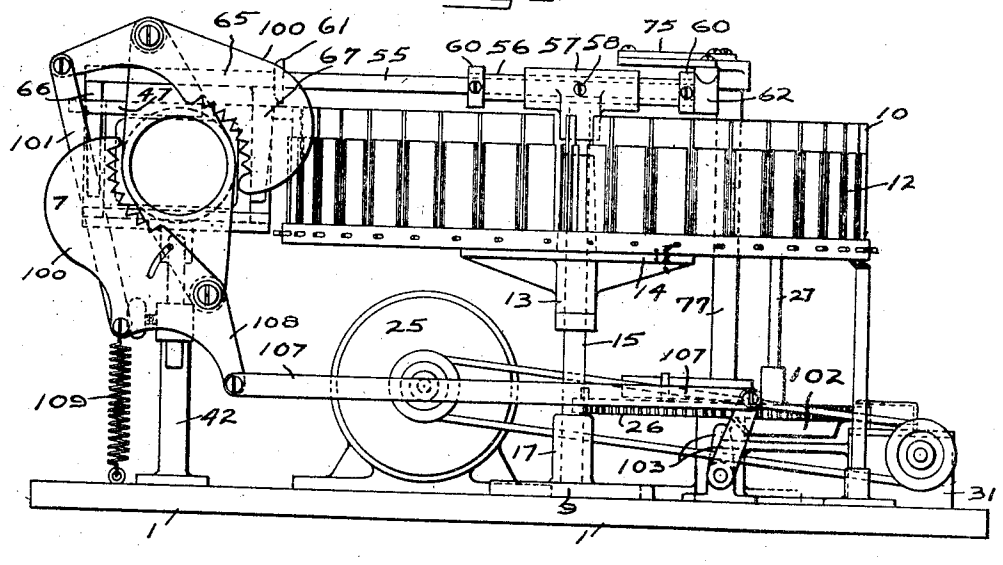



Fig. 3.




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3 SHEETS—SHEET 3.

Fig. 4.

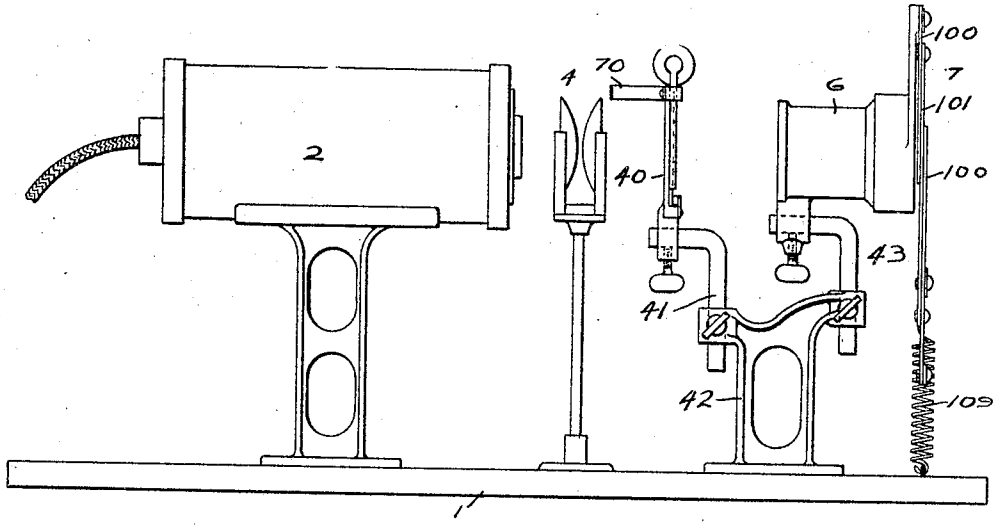



Fig. 6

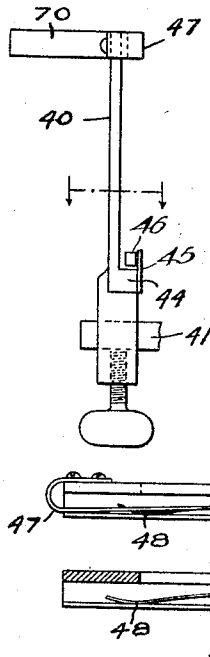



Fig. 7.

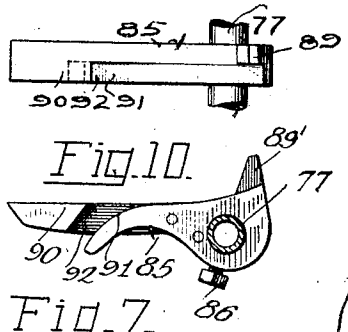
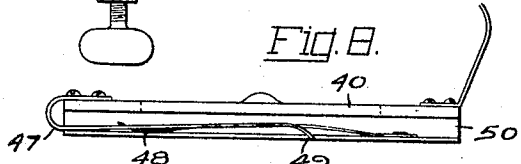



Fig. 10.

Fig. 8.



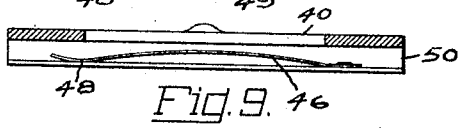
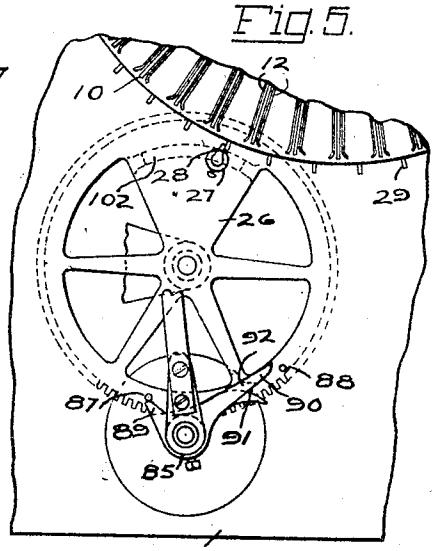




Fig. 9.

Fig. 5.




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# UNITED STATES PATENT OFFICE.

FREDERICK SCHWANHAUSSER, OF JERSEY CITY, NEW JERSEY.

## VIEW-CHANGING DEVICE.

1,151,221. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed July 27, 1914. Serial No. 853,524.

*To all whom it may concern:*

Be it known that I, FREDERICK SCHWANHAUSSER, a citizen of the United States, and a resident of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful View-Changing Device; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to stereomotographs.

It particularly relates to machines wherein pictures, representations, and illustrative subject matter contained upon transparent plates, slides or other bodies, strips or other objects or material, are projected upon a screen.

By my invention, a means is provided for manipulating a plurality of plates and a shutter of a stereopticon or other projective apparatus whereby the plates may be shifted or moved into position of exposure and removed therefrom during the period of closure of the shutter of the stereopticon.

The invention may be contained in many forms of constructions usable for different purposes all of which come within the purview of my claims hereinafter appended. To show the practicability of my invention, I have selected one of such constructions as an example and shall describe it hereinafter. The construction selected is illustrated in the accompanying drawings.

Figure 1 of the drawings illustrates a top plan view of the construction containing my invention. Figs. 2 and 3 illustrate side and end views of the construction shown in Fig. 1. Fig. 4 illustrates a side view opposite to that shown in Fig. 2, showing the projective apparatus. Fig. 5 illustrates details of construction for bringing, successively, a plurality of plates into position of exposure. Fig. 6 illustrates a side view of a cam used in connection with the mechanism for shifting the slides. Figs. 7, 8 and 9 illustrate end, top and sectional views of a frame which receives and holds the slide in the position of exposure in front of the stereopticon. Fig. 10 illustrates a plan view of the cam illustrated in Fig. 6.

1, in the figures, is the supporting base.

2 is the light producing means having a glower 3.

4 are the condensing lenses.

6 is the adjusting tube, and 7 is the shutter.

The parts are supported on the base 1 by suitable standards.

The plates or slides 10 are located upon a rotatable base plate 11. They are supported between guiding strips 12 which are secured in slots or by other suitable means in the base plate 11. Their lower edges may be embedded into the plate or the plates may be suitably clamped and secured thereto by any desired method or means. The base plate 11 is provided with a bearing 13 suitably bracketed and secured to a plate 14 which is attached to the rotatable plate 11. A rod or shaft 15 is stepped into the socket 16 formed in a protuberance 17 extending vertically from a plate 9 which is secured to the base 1. The shaft 15 may be secured in the socket 16 by means of a machine bolt 18. A ring 19 is adjustably secured to the shaft 15 by means of the screw 20. The bearing 13 rests upon the ring 19. The height of the plate 11 may be varied by varying the position of the ring 19 on the shaft 15, and in this manner the plate 11 is rotatably and adjustably mounted on the base 1.

The plate 11 may be rotated step by step by means of a motor of any form. As illustrated in the drawings, this may be accomplished by means of an electric motor 25 which drives, at much reduced speed, a gear wheel 26 through the medium of gears contained in the gear box 31. The gear 26 is provided with a post 27 having an adjustable engaging tooth 28. The rotatable plate 11 is provided with pins 29 which may be located alternately with respect to the guiding strips 12 located on the surface of the plate 11.

As the wheel 26 is rotated by the operation of the electric motor 25, the tooth 28, on the post 27, engages with the pins 29 in succession, and, consequently, each time the wheel is rotated the plate 11 is shifted the distance that the outer edges of the slides are separated. The plate 11 is thus moved step by step about the shaft 15 on the ring 19. A spring detent 35 is supported on a post 36 which is also secured to the base 1. The detent 35 is bellied upwardly to extend between two consecutive pins 29 so that as the plate 11 is rotated by the operation of

the engaging tooth 28 on the post 27 and is moved step by step, the spring 35 will enter between two consecutive pins 29 and hold the wheel in the position to which it is turned by the engaging tooth 28. As the engaging tooth 28 moves the plate 11 around each step, the pin behind the spring 35 will force the spring 35 downwardly until it passes over the top of the spring 35, then the elasticity of the spring will assist in the advancement of plate 11 until the following pin 29 engages with the following side of the spring 35 whereupon the spring will, by its elasticity, be pushed upwardly between the two adjacent pins 29 and hold the plate 11 in the position to which it is turned by the operation of the tooth 28.

A means is provided for shifting the transparent plates 10 into and out of the position of exposure of the projective apparatus. A frame 40 is supported in juxtaposition to the plate 11 and so as to register with the channels formed by the guide strips or plates 12 and in alinement therewith. The frame 40 is adjustably secured to an angular rod 41 which is, in turn, adjustably mounted in a standard 42 secured to the base 41. The standard 42 may also be used for adjustably supporting the tube 6 in any suitable manner, such as by means of the angular rod 43 which is adjustably secured to the standard 42. The frame 40 has an angular portion 44 forming the runway for the slides 10. A guiding strip 45 is secured to the lower edge of the frame 40 and may be provided with a spring 46 to hold the lower edges of the slides 10 against the frame 40 when they are placed in the frame. Also a spring 47 may be secured to the outer upper corner of the frame 40 which operates to press the upper edge of the slides 10 against the frame 40.

The springs 46 and 47 are provided with suitable lips 48 and 49, respectively, the one to press against the inner side of the strip 45 and the other to permit reception of the slides 10 between the springs 47 and the frame 40. The slides 10 are directed into the end 50 of the frame and between the springs 46 and 47 and the frame 40. The frame 40 surrounds the face of the slides, that is, around the part which is to be exposed and projected by the stereopticon.

As the plates 10 are brought in alinement with the runway of the frame 40, they are pushed outwardly by a suitable means into the frame 40 and allowed to remain there during the period of exposure. Immediately at the end of the period of exposure, they are moved into their positions on the plate 11 and the plate 11 is moved forwardly so as to bring the succeeding slide 10 in alinement with the frame 40 whereupon that slide is moved into the frame 40, that is, into position of exposure. This is accomplished by a mechanism operated by the rotation of the gear wheel 26. A rod 55 is slidably mounted in a sleeve 56 which is adjustably secured in a second co-axial sleeve 57 by means of the screw 58 which is mounted on the end of the shaft 15 and may be secured thereto by a screw bolt 59. The sleeve 56 may be provided with suitable adjustable stops or buffers 60 and the rod 55 may be provided with a flanged ring 61 and connecting ring 62 which operates to limit the movement of the rod 55 through the sleeve 56.

The rod 55 is secured to a frame 65 having downwardly extending arms 66 and 67. The arms are adapted to spread the slides 10 and push them in and out of the channels formed between the guide strips or plates 12 and into and out of the frame 40. The axis of the frame extends through the axis of rotation on the plate 11 and, consequently, the rod 55 extends radially from the center of the plate 11 and above the slides 10. When the frame 65 is located above the plate and the plate 11 is rotated by the engaging tooth 28 on the post 27, the slides 10 and the strips 12 move between the downwardly extending arms 66 and 67. When the rod 55 is moved outwardly, the downwardly extending arm 67 will move between two opposing strips 12 having flaring lips 68 which make certain the reception of the arm 67. The arm 67 pushes the slide out into the frame 40. As the frame 65 moves the slide 10 into the frame 40, it slides upon the runway of the frame, the strips 12 holding the following end of the slide 11 in a vertical position until the leading end of the upper edge of the slide 10 passes the lip 49 and is engaged by the spring 47. Upon the return movement of the rod 55, the downwardly extending arm 66 pushes the plate from the frame 40 into the channel formed between the plates 12 from whence the slide 10 was removed in the preceding operation of the frame 65. When the slide 10 is returned to its position on the plate 11, the plate 11 is moved so as to bring the succeeding slide into alinement with the frame 40 and in between the downwardly extending arms 66 and 67. The frame 40 may be provided with the spring 70 secured to the upper edge and rear corner of the frame 40 to push the slides into position to keep the outer edges of the slides within the inner edge of the frame 40 to prevent engagement of the edge of the slides with the frame 40 when the plate 11 is rotated by the operation of the tooth 28 on the post 27 which might otherwise work outwardly by reason of the jarring of the supporting plate 11 and the slides 10.

The rod 55 is shifted back and forth by means of an arm 75 which is connected to the ring 62 secured to the end of the rod 55

by means of a link 76. The arm 75 is secured to a rotatable sleeve 77 supported vertically by means of the post 78 which is socketed in the thimble 79 and secured therein by the bolt 80. The thimble 79 is provided with a base plate which is secured to the base 1. The arm 75 is secured to the sleeve 77 by means of a bracket 81 which is bolted to the sleeve 77 by the machine bolt 82. A cam dog 85 is also bolted to the sleeve 77 and near the lower end thereof by means of the bolt 86.

The cam dog 85 is located just above the plane of the gear wheel 26 and is operated by pins 87 and 88 located on the gear wheel 26. The upper and inner edge of the cam dog 85 is provided with a tooth 89 which is operated upon by the pin 87 which is of sufficient height to engage the dog 89. The pin 88, however, being shorter than the pin 87, will pass beneath the tooth 89 and thus avoid it while it is being moved by the wheel 26. The pin 87, in its operation upon the tooth 89, causes the sleeve 77 to rotate which moves the arm 75 to the left and moves the rod 55 in the same general direction and so as to push and slide it from the frame 40 into its position on the plate 11. When the pin 87 has completed this operation, and as it moves from the tooth 89 of the cam dog 85, the tooth 28 on the post 27 engages the pin 29 on the wheel 11 and, in further movement of the wheel 26, causes a step movement of the plate 11 which moves the succeeding slide 10 between the downwardly extending arms 66 and 67. This brings the plate succeeding the one which was returned, in alinement with the arms 66 and 67. The position of the post 27, having the engaging tooth 28, is positioned on the gear wheel 26 such that when the pin 87 passes the tooth 89 and directly upon the completion of its operation thereon, the tooth 28 will engage with one of the pins 29 on the plate 11 and move it. At the same time that the tooth 28 engages with a pin 29 on the plate 11, the shorter pin 88 passes to the rear of the downwardly extending lip 90 located on the cam dog 85 which locks the frame 65 in position, the limit ring or flange 61 being held against the buffer or limiting ring 60 located on the end of the sleeve 56. The outward movement of the rod 55 is thus prevented by the position of the pin 88 behind the downwardly extending lip 90. When the tooth 28 on the post 27 has completed its operation on the plate 11, the pin 88 has moved against the cam surface 91, and, upon further movement, swings the cam dog 85 about its axis turning the sleeve 77 and moving the arm 75 and rod 55 outwardly as the pin 88 moves through the channel 92. As the rod 55 is moved outwardly, it carries with it the frame 65 and the slide which has been brought in alinement with the frame 40 in the preceding operation of the tooth 28 on the plate 11, and into position of exposure. As the gear wheel 26 continues in its rotation, the pin 88 moves along the inner surface of the cam dog 85 and passes beneath the tooth 89. Also the post 27 being located radially within the outer end of the tooth 89, it will pass the cam dog 85 without operating it. The slide 10 will remain in its exposed position until the pin 87 again engages with the tooth 89 and draws the slide onto the plate 11 and between its supporting and opposing plates 12. When the tooth 28 engages another pin on the plate 11, it moves the plate 11 so as to bring the succeeding slide in alinement with the frame 40, while the pin 88 passes behind the downwardly extending lip 90. It then passes through the channel 92 operating upon the cam surface 91, causing the rod 55 to push the plate brought between the arm 66 and 67 out into the frame 40. These operations are repeated bringing into the position of exposure, the slides on plate 11 in succession. Just before the rod 55 draws the slide from the frame 40, the shutter 7 is closed. The shutter is opened after the rod 55 has returned the succeeding slide to the frame. The shutter 7 is of a form well known in the art consisting of two closing leaves 100 suitably pivoted to the supporting frame and connected together by a link 101 which causes the leaves 100 to move across and back from the optical axis of the stereopticon. The shutter is operated by a lip 102 which extends downwardly from the gear wheel 26. The cam lip 102 operates upon the bell crank lever 103 which is connected by the link 107 to the arm 108 of the shaft 7. The cam lip 106 turns the bell crank lever so as to close the shutter 7 when the cam 102 leaves the bell crank lever 103. The shutter 100 is operated by gravity or by the operation of the spring 109. The lip 102 is so positioned on the gear 26 that it begins to operate upon the bell crank lever 103 just in advance of the operation of the pin 87 on the tooth 89 of the cam dog 85 so as to close the shutter before the rod 55 pulls a slide from the frame 40 onto the plate 11. During the time that the shutter is closed, the slide is removed from the frame 40, the plate 11 is rotated one step in its intermittent movements and the succeeding slide is returned to the frame 40. By this time the gear wheel 26 has turned angularly sufficient to release the bell crank lever 103 and allow the shutter to open.

The construction selected and described may be greatly varied in the arrangement and manufacture of its parts and in the substitution of elements having equivalent functions and such modifications may be

used for many varied purposes and still contain the invention which is described in the claims in the language of the elements shown.

What I claim as new and desire to secure by Letters Patent, is, as follows:

1. In combination with a projective means, a plate for supporting slides, means for moving the plate intermittently, means for shifting the slides into and out of position of exposure in succession, a cam for operating the said shifting means and having a pair of cam surfaces, a wheel having a pin for operating on one cam surface to move the shifting means in one direction and a second pin for operating on the other cam surface for shifting the shifting means in the other direction.

2. In combination with a projective means, a plate for supporting slides, means for moving the plate intermittently, means for shifting the slides into and out of position of exposure in succession, a cam for operating the said shifting means and having a pair of cam surfaces, a plate for intermittently moving the slides, a wheel having a pin for operating on one cam surface to move the shifting means in one direction and a pin for operating on the other cam surface for moving the shifting means in the opposite direction and a pin for moving the plate intermediate the movements of the shifting means.

3. In combination with a projective means, a rotatable plate for supporting slides, means for moving the plate intermittently, a frame for engaging the slides in succession, an arm for shifting the frame, a wheel, an engaging tooth connected to the said wheel for moving the plate intermittently, a cam connected to the said arm, and pins located on the wheel for rotating the cam to shift the frame to move each plate in succession into and out of position of exposure.

4. In combination with a projective means, a rotatable plate for supporting slides, means for moving the plate intermittently, a frame for engaging the slides in succession, an arm for shifting the frame, a wheel, an engaging tooth connected to the said wheel for moving the plate intermittently, a cam connected to the said arm, pins located on the wheel for rotating the cam to shift the frame to move each plate in succession into and out of position of exposure, the cam having a locking lip for engaging one of the pins during the operation of the engaging tooth of the plate.

5. In combination with a projective means, a rotatable plate for supporting slides, means for moving the plate intermittently, a frame for engaging slides in succession, a cam having a pair of cam surfaces disposed in different horizontal planes, means for connecting the cam with the frame for shifting the frame as the cam is rotated, a wheel, pins of different lengths connected to the wheel, the shorter pin adapted to operate on one cam surface and not on the other of the cam surfaces, the pin of intermediate length adapted to operate on the other cam surface and the longer pin adapted to operate upon the plate intermediate the movements of the cam by the other two pins.

6. In combination with a projective means, a rotatable plate for supporting slides, means for moving the plate intermittently, a frame for engaging the slides in succession, a cam having a pair of cam surfaces disposed in different horizontal planes, a wheel having two pins, one pin adapted to operate on one cam surface and the other pin adapted to operate on the other cam surface, and means for intermittently moving the plate intermediate the movements of the cam and means for connecting the cam with the frame for shifting the frame as the cam is rotated.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

F. SCHWANHAUSSER.

Witnesses:
HENRY SMEUTER,
WM. G. VOLTLER.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**